

METHOD AND APPARATUS FOR LOCATING/SIZING CONTAMINANTS ON A
POLISHED PLANAR SURFACE OF A DIELECTRIC OR SEMICONDUCTOR
MATERIAL

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ABSTRACT OF THE DISCLOSURE

To locate/size contaminants at the surface of a dielectric or semiconductor material, a P-polarized beam of light from a monochromatic solid-state source is disposed specifically at Brewster's angle and focused to form an illuminated quasi-elliptical spot on the surface that produces effectively no reflected or scattered light from the surface. The spot is scanned over the entire surface so as to assure multiple passes of any contaminant through the spot. On each pass through the spot a contaminant will produce scattered light. A novel high numerical aperture reflective or refractive system is disposed above the surface to always view the spot and to collect/redirect the bulk of the contaminant scattered light to a detector. Illumination at Brewster's angle combined with the high numerical aperture scattered light collector/redirector maximizes the signal-to-noise ratio from the detector. These core components are packaged with support subsystems as a uniquely compact and portable apparatus.